

WHAT IS CLAIMED AND DESIRED TO BE SECURED BY LETTERS

PATENT OF THE UNITED STATES IS:

1. A method for scheduling upstream channel transmission by a wireless modem of a plurality of wireless modems in communication with a wireless hub in a broadband wireless access system, comprising:

synchronizing the wireless modem with a wireless hub on a downstream channel by synchronizing the symbol timing, forward error correction framing, and recognition of a synchronization message at the wireless modem;

receiving at the wireless modem on the downstream channel at least one message comprising information regarding parameters for communicating over each of a plurality of upstream channels;

utilizing one upstream channel of the plurality of upstream channels to communicate from the wireless modem to the wireless hub for one burst;

transmitting from the wireless hub to the wireless modem on the downstream channel at least one message regarding a change to some of the parameters for communicating over at least some of the plurality of upstream channels; and

utilizing another upstream channel of the plurality of upstream channels for another burst to communicate from the wireless modem to the wireless hub based upon the change to some

of the parameters for communicating over each of the plurality of upstream channels.

2. The method of Claim 1, wherein the step of utilizing  
5 one upstream channel of the plurality of upstream channels comprises utilizing the one upstream channel based upon an assignment to the one upstream channel in the message comprising information regarding the parameters for communicating over each of the plurality of upstream channels.

3. The method of Claim 1, wherein the step of utilizing one upstream channel of the plurality of upstream channels comprises utilizing the one upstream channel based upon a selection of the one upstream channel at the wireless modem based upon the message comprising information regarding the parameters for communicating over each of a plurality of upstream channels.

4. The method of Claim 3, wherein message comprising  
20 information regarding the parameters for communicating over each of a plurality of upstream channels includes a priority parameter, the step of utilizing the one upstream channel based upon the selection of the one upstream channel at the wireless

modem comprises making the selection based upon a priority value.

5. The method of Claim 1 wherein the wireless modem communicates utilizing the one upstream channel and the another upstream channel based upon instructions contained in the at least one message comprising information regarding the parameters for communicating over each of the plurality of upstream channels.

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6. The method of Claim 1 wherein the parameters comprise at least one of signal power, frequency and timing.

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7. The method according to Claim 1, wherein:  
said step of utilizing another upstream channel comprises utilizing at least one other upstream channel of the plurality of upstream channels for other communication bursts from the wireless modem to the wireless hub; and  
switching between the one upstream channel and the other upstream channels based on the parameters for communicating over each of the plurality of upstream channels.  
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8. The method according to Claim 7, wherein said parameters include a channel identification and a mini-slot designation for each communication burst.

5 9. The method according to Claim 1, further comprising the step of calibrating parameters of the plurality of upstream channels.

10. The method according to Claim 9, wherein said parameters include at least one of power, timing, frequency offset, and equalizer coefficients.

11. The method according to Claim 9, wherein said step of calibrating comprises the steps of:

measuring the parameters received by the hub;  
sending a correction message from the hub to the modem; and  
changing the parameters at the modem.

20 12. A method of calibrating a modem in a communication system, comprising the steps of:

measuring parameters of messages received by a hub communicating with said modem;  
sending a correction message from the hub to the modem; and  
changing the parameters at the modem.

13. The method according to Claim 12, wherein said parameters include at least one of power, timing, frequency offset, and equalizer coefficients.

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14. The method according to Claim 12, wherein said modem and said hub are part of a broadband wireless access system.

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15. the method according to Claim 12, wherein:  
a modem currently communicating with said hub is calibrated by measuring the parameters of data received; and  
a modem currently idle is calibrated using a polling scheme.

16. The method according to Claim 15, wherein said polling scheme is performed at a lower data rate than other communications with said hub.

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17. The method according to Claim 15, wherein said polling scheme is performed at times when a channel on which the polling is performed is free of other traffic.

18. The method according to Claim 8, further comprising the steps of:

allocating each of said plurality of upstream channels to different of said plurality of wireless modems for communication bursts on a predetermined schedule; and

5 calibrating parameters of each of the plurality of upstream channels for each of the modems using the communication bursts between each respective modem and the wireless hub.

19. The method according to Claim 18, wherein said parameters include at least one of power, timing, frequency offset, and equalizer coefficients.

20. The method according to Claim 19, wherein said predetermined schedule is a minimum allocation rate assigned to each modem.

21. The method according to Claim 20, wherein said step of allocating comprises the step of sending a special message to communicate with a modem and cause a communication burst if the modem is not communicating with said hub at a rate sufficient to 20 meet the minimum allocation rate assigned to the modem.

22. The method according to Claim 1, wherein said modems and said hub are at least part of a broadband wireless access system.